This Product Works Well (for Me):

The Impact of First-Person Singular Pronouns on Online Review Helpfulness

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Abstract

Can linguistic choices of reviewers, such as using first-person singular pronouns (FPSP), affect readers' perception of information helpfulness? When sharing their purchase and consumption experiences, online reviewers tend to excessively use FPSP to refer to themselves. However, the effect of this language choice on readers' perception of information value is unknown. Drawing on communication and psycholinguistic literatures, this research theoretically develops and empirically analyzes the effects of the use of FPSP on perceived review helpfulness. The empirical results, based on a sample of 41,656 reviews from Amazon.com, suggest that the use of these pronouns has a negative impact on the perceived helpfulness of online reviews. In addition, such effects are moderated by review attributes such as length, valence and affective content, being more prominent for shorter reviews, reviews with lower valence and higher level of affect.

Keywords: online reviews; text analysis; electronic word-of-mouth (eWOM); perceived helpfulness; first-person singular pronoun; elaboration likelihood model

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1. Introduction

Consider the following two online reviews for a TV:

(1) This TV was definitely not a good purchase. Its quality is terrible and it cannot be fixed. The user interface is very complicated.

(2) I regret buying this TV. I've been fiddling with it since I purchased it and the quality is still terrible. I found it too complicated.

Which of these reviews is more helpful in consumers' product evaluation and purchase decision?

Offering rich and readily accessible information, online product reviews have become an integral information source in our daily purchase decisions. Being exposed to the large pool of online reviews, readers are selective. They find certain reviews more helpful than others, offering them higher diagnostic value (Pan & Zhang, 2011). A helpful review provides readers with useful information that enables them to make more informed decisions; although such decisions might not necessarily be in favor of the product.

Online review helpfulness is an inherently distinct area of research from studying the effect of reviews on consumer attitude and purchase intention (Floyd et al., 2014; Ruiz-Mafe et al., 2018). The concept of review helpfulness is rooted in information value, which is not necessarily linked to sales. Review helpfulness is concerned with how consumers evaluate the information; consequently, its antecedents could differ from those of sales. For example, a negative review can be very helpful to readers, but has a negative impact on sales. Online

reviews serve as a vital source of information for consumers. Therefore, understanding determinants of their perceived helpfulness is theoretically important and managerially valuable.

Literature on online review helpfulness has investigated various review attributes that contribute to the perception of review helpfulness, such as valence, length, extremity/equivocality and review sentiment (Forman, Ghose, & Wiesenfeld, 2008; Mudambi & Schuff, 2010; Ordenes et al., 2017; Pan & Zhang, 2011; Salehan & Kim, 2016), but largely neglects the linguistic characteristics of reviews. Reviewers adopt different ways of expressing the same information, for example, they may choose to use different personal pronouns. Looking back at the above examples, the two reviews express identical experiences and are of similar descriptive attributes in terms of valence and length. But a prominent difference lies in the use of first-person singular pronouns (FPSP) in constructing the review content. The first review does not contain FPSP, hence reviewer self-presentation is absent from the content. In contrast, the second review is written with FPSP, resulting in strong reviewer presence and a personal tone. The effect of personal pronouns as an influential category of function words that shape the comprehension of the message (Brunyé et al., 2009; Gernsbacher & Hargreaves, 1988) has not been explored in the context of online reviews.

Whether to use FPSP in a review is an inevitable linguistic decision that reviewers make. Interestingly, online reviewers are inclined to use FPSP while describing their experiences. Their tendency to use FPSP is largely associated with their strong focus on self (Chung & Pennebaker, 2007) and reflection on personal experiences while formulating opinions and writing reviews. The one-to-many communication mode featured in this setting further enhances reviewers' self-focus (Barasch & Berger, 2014; Chiou & Lee, 2013; Vorauer & Ross, 1999). An early study by Pollach (2006) shows that FPSP consist of 71.4% of all personal pronouns used in online product

reviews, while all other personal pronouns, including first-person plural, second-person, and third-person pronouns, together equate to 28.6%.

Although it might be an unconscious linguistic decision, the use of FPSP in the construction of review content may affect its information value and perceived helpfulness. Psycholinguistic and communication research have long suggested that pronouns provide comprehension cues that affect communication effectiveness (Brunyé et al., 2009; Gernsbacher & Hargreaves, 1988). But the nature of this effect is often context dependent (Arnaudet & Barrett, 1984; Hyland, 2008; Zupnik, 1994). For example, using FPSP could be effective in political discourse (Zupnik, 1994), but less preferred in doctor-patient communication (Skelton et al., 2002) and scientific and technical writing (Arnaudet & Barrett, 1984; Hyland, 2008). Online product reviews feature unique characteristics. As such, the influence of FPSP needs to be investigated within this particular context.

For this purpose, we draw on the elaboration likelihood model (ELM) and discourse comprehension theories to theorize the potential effect of FPSP on readers. Use of FPSP adds the reviewer as a prominent subject into the review message, changing the content and structure of information. We suggest that this could increase information subjectivity, add to information complexity, decrease information relevance, and distract readers' attention, thus having a negative effect on perceived review helpfulness. To test our hypotheses, a sample of 41,656 reviews from Amazon.com are analyzed. The results confirm the negative effect of using FPSP on online review helpfulness. Further examination on the interaction terms indicates that such effect is moderated by review attributes such as length, valence and affective content. The effect is more prominent for shorter reviews, reviews with lower valence and higher level of affect.

2. Theoretical Background

2.1. Online Review Helpfulness

A growing body of research has been conducted to identify factors that contribute to online review helpfulness. Helpfulness of a review is a reflection of its diagnosticity in consumers' decision-making process (Filieri, 2015; Mudambi & Schuff, 2010; Wang, Menon, & Ranaweera, 2018). As consumers' perception of review helpfulness is the outcome of their information evaluation, dual process theories such as the elaboration likelihood model (ELM) (Petty & Cacioppo, 1986) and the heuristic systematic model (HSM) (Chaiken, 1980), are widely used as the theoretical foundation for this line of research (Cheung et al., 2012; Filieri, 2015; Kim et al., 2018).

The ELM, for example, suggests that message recipients have various likelihood of elaboration on issue-relevant arguments, which is determined by their motivation and ability to evaluate the message. Elaboration likelihood is a continuum anchored at one end by the peripheral route, and at the other end by the central route (Cialdini, Petty, & Cacioppo, 1981; Petty & Cacioppo, 1986). In the central route of information processing, message recipients engage in a high level of cognitive effort and carefully evaluate the true merits of the message argument. Under the peripheral route, recipients avoid cognitive effort and rely on peripheral cues rather than arguments to make simplified inferences on the value of the message. Depending on contextual and situational factors, different elements of the message or its source can assume more than one role as an argument component, a peripheral cue, or affecting the extent of argument elaboration (Petty & Cacioppo, 1986).

In the online review context, the ELM is used to explain how readers evaluate the helpfulness of a review by a range of review and reviewer attributes (Cheung et al., 2012; Filieri,

2015). Table 1 summarizes these main attributes and categorizes them into argument quality and peripheral cues according to the extant literature. It then puts this research into context by illustrating that the use of FPSP brings the reviewer to message content and influences readers' evaluation of argument quality. This is different from previous studies that have only considered the reviewer as the source of message, which is commonly recognized a peripheral cue.

[Insert Table 1 Here]

Early research on online review helpfulness has mainly focused on descriptive features of reviews, which are peripheral cues that can be easily captured and processed by readers (Karimi & Wang, 2017; Mudambi & Schuff, 2010). These include both review and reviewer features. Common review features studied include review valence, extremity/equivocality, and length (Forman, Ghose, & Wiesenfeld, 2008; Mudambi & Schuff, 2010; Pan & Zhang, 2011). Review valence is a summative number that represents the reviewer's general opinion towards a product (Baek, Ahn, & Choi, 2012; Mudambi & Schuff, 2010); review extremity/equivocality reflects the extremity of reviewer opinion (Mudambi & Schuff, 2010); review length is an indicator of the information quantity and the effort that a reviewer has put into product evaluation and writing the review (Chen & Huang, 2013).

Reviewer information also provides readers with peripheral cues. For example, information on message source such as its credibility has been predominantly considered as a peripheral cue in ELM research (Petty, Cacioppo, & Goldman, 1981). Online reviewers are mostly anonymous consumers, offering limited source credibility information. As such, readers use a wide range of reviewer information, such as identity disclosure, reviewer ranking and expertise, and profile image (Baek, Ahn, & Choi, 2012; Cheng & Ho, 2015; Karimi & Wang, 2017; Willemsen, Neijens, Bronner, & De Ridder, 2011), as peripheral cues to assess the quality

and helpfulness of the review. For example, availability of reviewer information such as location and real name is a signal of source credibility to readers, thus increases review helpfulness (Forman, Ghose, & Wiesenfeld, 2008); or reviewer's profile image, as an aesthetic cue, enhances perception of review helpfulness (Karimi & Wang, 2017).

Recent studies have used text analysis techniques to examine the content elements of review message (Malik & Iqbal, 2018; Ngo-Ye, Sinha, & Sen, 2017). Readers read and comprehend review content to fulfill their information need (Cheung et al., 2012). As such, review content is a strong predictor of review helpfulness (Cao et al., 2011; Willemsen, Neijens, Bronner, & De Ridder, 2011). Review content provides readers with both issue-related arguments and peripheral cues in their information evaluation. For example, features such as argument density and diversity directly relate to argument quality (Singh et al., 2017; Willemsen, Neijens, Bronner, & De Ridder, 2011), while sentiment, readability and punctuations could be used by readers as peripheral cues (Folse, Porter, Godbole, & Reynolds, 2016; Salehan & Kim, 2016).

Our research explores the use of FPSP in review content as an element within the message argument, which is not only a core part of text meaning but also interlinked with product-related information; therefore it affects the argument quality. This study contributes to the literature by showing that the role of reviewer in readers' comprehension of review content and evaluation of review helpfulness is not limited to the peripheral cues such as source credibility. When FPSP are used in constructing the review message, reviewer serves as an important element within the review content and could be processed by readers as part of issue-relevant arguments. Therefore, the use of FPSP affects the perception of review helpfulness.

2.2. Use of Personal Pronouns and Communication Effectiveness

Communication and psycholinguistic literatures have long recognized that subtle linguistic variations can have a strong impact on readers' comprehension and evaluation of textual content (Brunyé et al., 2009; Gernsbacher & Hargreaves, 1988). One of the important variations is in the use of function words, such as personal pronouns. Pronouns are related to the notion of referencing, which is a core part of text meaning. Personal pronouns can evoke or direct attention to a specific subject (Bergen & Chang, 2005). They provide readers with information regarding the main entities in the message that need to be processed, thus they affect readers' text comprehension (Kintsch, 1988).

The marketing literature has examined several settings in which the use of personal pronouns affects firm or brand communication. For example, addressing the audience directly by using the second person pronoun, "you", can prompt self-referencing. Self-referencing is a process that enhances the persuasive power of a message (Escalas, 2006) because audiences understand the incoming information by comparing it to self-relevant information such as personal experiences (Burnkrant & Unnava, 1995; Debevec & Romeo, 1992). In brand communication context, using pronoun "we" instead of "you and [a brand]" conveys subtle information on the closeness of the relationship between consumers and the brand, therefore, it can affect consumers' brand attitude (Sela, Wheeler, & Sarial-Abi, 2012).

2.3. Use of First-Person Singular Pronouns and Online Review Helpfulness

To understand the effect of FPSP on online review helpfulness, we draw on the ELM and the mental model theory of discourse comprehension. The ELM suggests that readers have various likelihood of elaboration on the message content (Petty & Cacioppo, 1986); whereas the

mental model theory provides a framework to explain how readers elaborate on and comprehend a message. During elaboration, individuals create mental models of the described situation to comprehend the message and assess its argument quality. A core part of text meaning, FPSP are entangled with product-related information, thus can affect argument quality. Theories of comprehension such as the mental model theory can assist in explaining how FPSP as part of the message content affect readers' evaluation of reviews and their helpfulness. In addition to its role in determining the argument quality, FPSP, referring to the reviewer, may also be used as a peripheral cue when readers exert little elaboration on review content. Reviewer as a peripheral cue has been previously examined and shown to influence online review helpfulness (Baek, Ahn, & Choi, 2012; Cheng & Ho, 2015).

The mental model theory suggests that individuals understand discourse by constructing mental models of the described situation (Johnson-Laird et al., 1999). Mental models serve as a base upon which individuals capture the meaning and fashion their understanding of a message by explaining how information is represented in the mind (Klimoski & Mohammed, 1994; Johnson-Laird, 1983). They include representations of all entities involved in the text, description of their characteristics, and inferences on their relations (Conway, 1997; Johnson-Laird et al., 1999; van Dijk & Kintsch, 1983). During text comprehension, readers attempt to construct a congruent mental model based on the incoming information (Sparks, 2012). When exposed to online reviews, readers encounter a multiple text reading situation (McCrudden & Schraw, 2007; Stadtler et al., 2011), in which they need to process texts from different sources/reviewers (Sparks, 2012). To form a congruent mental model, they need to establish cross-textual coherence and integrate the information (McCrudden & Schraw, 2007) from

multiple reviews. Readers assess the helpfulness of each review based on how well it can help them form a congruent mental model for the product (Gernsbacher & Hargreaves, 1988).

Pronouns are an important linguistic input to readers' mental models (Garnham, 1997), as they provide references to the key entities in the text (Kintsch, 1988). The use of FPSP in a review affects readers' comprehension as it alters the content and structure of the information. By adding the reviewer to the content, FPSP create an additional entity in the mental model (Zwaan & Radvansky, 1998). In order for readers to understand the review, they need to create an entity for the reviewer, attach the information to the characteristics of the entity, and understand their relation to the product under review (Bower & Morrow, 1990). For example, the review "The quality of the TV is good" centers all information on the product, therefore, only one entity for the TV is established. Whereas in "I like the quality of the TV", readers need to create entities for this reviewer and the TV, then create a relational link between the two in order to comprehend the text. Reviewer presence in the content influences readers' central processing of review content and evaluation of review helpfulness, as will be discussed below. Figure 1 illustrates our research framework.

[Insert Figure 1 Here]

First, the use of FPSP prompts readers to create a relational link between the reviewer and the product in their mental model that leads to the perception of information subjectivity (Hyland, 2008; Na & Choi, 2009). It highlights the presence of reviewer in the described situation and construction of the conclusions (Bower & Morrow, 1990). The use of FPSP conveys to readers that the stated opinion is a personal experience, which may raise concerns regarding its applicability to others (Wang, Cunningham, & Eastin, 2015). Such reviews are considered less valuable by readers. Comparatively, reviews without FPSP are perceived as less

biased and factual rather than subjective (Lee & Lee, 2009) because the information is not linked directly to any particular character (the reviewer), instead it is associated with the object (product). Subjectivity of information has a negative impact on its perceived helpfulness (Park & Lee, 2008).

Moreover, reviewer presence in review content adds to information complexity. Processing information on additional entities and associated relations in readers' mental models requires further cognitive efforts and elaboration on the message argument. The reader need to actively collect and process reviewers' information, make inferences on their attributes, and understand their relationship to the product (Bower & Morrow, 1990) in order to evaluate the review content. Processing reviewers' information and making inferences on multiple reviewers in online review reading presents a significant cognitive task. Consumer research shows that readers of utilitarian-oriented information search prefer information presented in an efficient and straightforward format (Peracchio & Meyers-Levey, 1997). Increasing complexity of the information structure and text processing is detrimental to comprehension (Biswas, 2004; Browne, Pitts, & Wetherbe, 2007) and negatively influences the review helpfulness.

In addition, the use of FPSP directs readers' attention towards the reviewer and away from the product. Research on the mental model theory indicates that when a subject is presented in the text, the subject's described information is more active in readers' mind and maintained in their focal attention (Gunel, 1999; Kaup & Zwaan, 2003). The more FPSP are used, the more readers are focused on the reviewer (Albrecht & O'Brien, 1993). Reduced attention to the product can interfere with encoding and comprehension of new product-related information within the text (Mick, 1992; Sujan et al., 1993). By deteriorating the comprehension of product-related information, the use of FPSP may result in lower perceived helpfulness of the review. In

fact, distraction from the main argument of the message can reduce its persuasiveness (Tavassoli & Lee, 2003), hence helpfulness.

Furthermore, the use of FPSP may reduce the perceived relevance of the information. Relevance in multiple text processing is the degree to which a text is germane to a specific task or goal (McCrudden & Schraw, 2007). Research on consumer information acquisition and choice experience indicates consumers' goals are important in their information acquisition because the information consumers learn is organized in memory around their goals (Huffman & Houston, 1993). Theories of discourse comprehension suggest that information relevance is one of the primary criteria that readers rely on in multiple text comprehension (McCrudden & Schraw, 2007). The reader's main objective is to form a coherent mental model of the product, rather than understanding individual reviewers (Huffman & Houston, 1993). Thus reviewer presence can decrease the perceived relevance of the review.

In summary, the use of FPSP may suggest information subjectivity, increase information complexity, distract readers' attention, and decrease information relevance. By decreasing readers' perception of information value, they all have a negative effect on perceived review helpfulness. We test:

H1. The use of first-person singular pronouns negatively affects the perceived helpfulness of online product reviews.

2.4. The Impact of First-Person Singular Pronouns on Different Types of Reviews

The impact of FPSP on review helpfulness is not limited to its direct effect. Previous research on ELM indicates that different features of the message, such as issue-relevant arguments and peripheral cues, can have an interactive influence on readers' attitude (Lord, Lee,

& Sauer, 1995). Therefore, we discuss the potential interaction effects of FPSP with other review features.

Reviews are diverse in their attributes such as length, rating valence, equivocality/extremity, and affective content. Online review literature has shown that these attributes have a direct effect on review helpfulness (Forman, Ghose, & Wiesenfeld, 2008; Karimi & Wang, 2017; Mudambi & Schuff, 2010; Pan & Zhang, 2011; Salehan & Kim, 2016). These attributes may also moderate the effect of FPSP on review helpfulness. In other words, the consequences of using FPSP may not be the same for all types of reviews, but rather depend on other review attributes.

Online reviews are of various lengths. Previous research suggests that longer reviews tend to be more helpful than shorter ones (Mudambi & Schuff, 2010). Review length can influence helpfulness by providing a peripheral cue that signals information quantity and reviewer effort (Chen & Huang, 2013). It is also used as a measure for the depth of arguments and descriptions that reviews offer to readers (Baek, Ahn, & Choi, 2012; Mudambi & Schuff, 2010). Review length can interact with FPSP to affect review helpfulness.

Based on the mental model theory (Johnson-Laird, 1983), when FPSP are used, readers develop a relational link between the product and the reviewer, and need to assess both entities to understand the text and evaluate information value. As they read the text, they add the incoming information to their mental model to create a congruent representation of the situation (Gernsbacher & Hargreaves, 1988; Zwaan & Radvansky, 1998). However, online reviewers are mostly anonymous consumers, whose information including motivations and abilities are unknown to readers. In addition, the online review environment lacks social context cues (Dubrovsky, Kiesleer, & Sethna, 1991). As a result, readers need to derive reviewer information

from review content (Schlosser, 2011). Lengthier descriptions and detailed explanations provide more information on the described situation that can help form a more comprehensive mental model, which is crucial for a better comprehension (Johnson-Laird, 1983; van Dijk & Kintsch, 1983). Readers encounter more scenarios and learn more about reviewers' rationale, thus they can better process and evaluate the described experience, and make sense of the review content. Longer reviews therefore provide readers with the opportunity to perform further elaboration and form a more comprehensive understanding of the review content, alleviating the negative effect of FPSP on review helpfulness. Whereas, in a short reviews with FPSP, the relational link between the reviewer and product is not well developed and supported, leading to unavailability of a complete mental model. This can escalate issues of using FPSP, and does not provide readers with an opportunity to shape a complete and congruent understanding of the described situation. We test:

H2(a). Review length moderates the effect of first-person singular pronouns on review helpfulness. The negative effect of first-person singular pronouns is more prominent in shorter reviews than in longer ones.

Review valence provides a numeric indication of a reviewer's opinion. Its variation reflects the differences in customers' purchase satisfaction and overall consumption experience (Wang, Menon, & Ranaweera, 2018). Review valence influences readers' perception of review helpfulness (Purnawirawan, Eisend, De Pelsmacker, & Dens, 2015). Negative reviews tend to have a higher weight in consumer evaluation than positive ones (Park & Lee, 2009) because individuals tend to be more cost oriented in their decision making (Kanouse & Hanson, 1987). In other words, consumer choice and preferences are more influenced by losses than gains (Tversky & Kahneman, 1991). Therefore, readers process the negative information more carefully and are

more sensitive to their content quality compared to positive reviews (Wang, Cunningham, & Eastin, 2015). As a result of readers' enhanced elaboration on the content of reviews with lower valence, the effects of any elements within the message argument such as the negative effect of using FPSP could be escalated.

Reviews written with FPSP prompt readers to include the expressed opinion in their mental model as a personal experience of the reviewer (Bower & Morrow, 1990). These reviews are found less credible due to the increased perception of subjectivity. Previous research indicates that review valence and subjectivity have an interaction effect on communication effectiveness (Hong & Park, 2012; Thomas, Reimer, & Benkenstein, 2016; Wang, Cunningham, & Eastin, 2015). When a review is written in a subjective manner, negative reviews are perceived to be less credible that positive ones (Hong & Park, 2012). Therefore when FPSP are used, due to the increased perception of review subjectivity, readers are more likely to associate less value to the negative reviews than positive ones. We test:

H2(b). Review valence moderates the effect of first-person singular pronouns on review helpfulness. The negative effect of first-person singular pronouns is more prominent in reviews with lower valence than those with higher valence.

Reviews also vary on the extremity of the opinion they present. Extreme reviews are those reviews that illustrate either a very low rating (one star) or a very high rating (five stars). The impact of review extremity on review helpfulness has been previously explored (Forman, Ghose, & Wiesenfeld, 2008; Karimi & Wang, 2017; Mudambi & Schuff, 2010). We suggest that extremity acts as a peripheral cue that signals to readers this review contains extreme attitude. Individuals are usually more open to moderate view. This is because they tend to represent two-sided arguments that in general are more informative (Schlosser, 2011) and offer a more

objective assessment (Mudambi & Schuff, 2010), hence being more credible (Eisend, 2006; Schlosser, 2005). By indicating that this review is based on single-sided arguments, extreme reviews could raise concerns on the credibility and fairness of the review (Mudambi & Schuff, 2010; Purnawirawan, Eisend, De Pelsmacker, & Dens, 2015). This effect can interact with other elements of a review. For example, Schlosser (2011) illustrated that when consumers evaluate the helpfulness of a review, extreme rating can interact with the review content argument. When written with FPSP, review content is considered as being more subjective by readers. Extreme review rating in this situation can further raise concerns on informativeness, objectivity and helpfulness of the review. In fact, readers may ignore reviews with extreme ratings if they seem to reflect a subjective preference (Mudambi & Schuff, 2010). Whereas a more moderate review may help reduce readers' perception of review unhelpfulness associated with the use of FPSP. Therefore, extremity and use of FSPS may moderate each other's effect. We test:

H2(c). Review extremity moderates the effect of first-person singular pronouns on review helpfulness. The negative effect of first-person singular pronouns is more prominent in extreme reviews than moderate ones.

Reviews express different levels of affective content. Affect indicates the "internal feeling state" of a message (Cohen et al., 2008, p. 297), consisting both positive and negative words. The net value of positive and negative emotional content is captured by sentiment (Salehan & Kim, 2016). Affect influences readers' information processing and evaluation of review helpfulness (Lench, Flores, & Bench, 2011; Ludwig et al., 2013). We suggest that affective content could strengthen the negative impact of using FPSP. When FPSP are used, positive and negative affective words such as nice, love, ugly, and hate, reflect the internal feeling state of the reviewer within the described situation. This information is tied to the subject

traits (Brunyé, Ditman, Mahoney, & Taylor, 2011) and will be included in readers' mental models. As use of affective content relates the described event or opinion to the reviewer, it escalates the perception of information subjectivity. Furthermore, this additional information adds to the complexity of comprehension by prompting readers to store and process the emotions of reviewers (Zwaan & Radvansky, 1998). As readers track the emotions of the reviewer to evaluate text outcomes (Brunyé, Ditman, Mahoney, & Taylor, 2011), they are further distracted from the product information. Therefore, review helpfulness is negatively affected when FPSP are used along with affective content. We test:

H2(d). The level of affect in a review moderates the effect of first-person singular pronouns on review helpfulness. The negative effect of first-person singular pronouns is more prominent for reviews of a higher level than those of a lower level of affect.

3. Methodology

Online reviews for four product categories, including TV, printer, book and music album, were collected from Amazon.com in September 2016. These products are widely purchased online and consumers heavily rely on product reviews in their decisions. We randomly selected 30 printers out of the total of 58 laser printers listed on the website, 30 TVs out of the 100 best sellers, 30 books from the best seller list, and 30 music albums from the top 100 bought albums. All reviews available for the selected 120 products were collected using a web crawler program, resulting in a sample of 41,656 reviews in total. The data gathered for each review instance included: the review's rating, comment, date, title, number of helpful vote, and number of total vote.

To test hypothesis H1, the effect of FPSP on review helpfulness, we examine the following:

$$Help_{ip} = C + \alpha_1 \cdot FPSP_{ip} + \beta_1 \cdot Length_{ip} + \beta_2 \cdot Rating_{ip} + \beta_3 \cdot Extremity_{ip} + \beta_4 \cdot Affect_{ip} + \beta_5 \cdot FPPP_{ip} + \beta_6 \cdot 2ndPP_{ip} + \beta_7 \cdot 3rdPP_{ip} + \beta_8 \cdot IPP_{ip} + \beta_9 \cdot Time_{ip} + \sum_{p=1,\dots,120} \delta_p + \varepsilon_{ip} \quad (1)$$

where $Help_{ip}$, a common measure of review helpfulness used in prior research (Huang, Chen, Yen, & Tran, 2015; Karimi & Wang, 2017; Mudambi & Schuff, 2010), is the percentage of helpful votes in the total votes for review i of product p, with value of 0 for reviews with no votes; C is the constant; $FPSP_{ip}$ is the ratio of FPSP count to the total word count in a review; $Length_{ip}$ is the review length measured by its word count; $Rating_{ip}$ is the review valence; $Extremity_{ip}$ is the review extremity with the value of 1 for reviews with rating 1 or 5, and 0 otherwise; $Affect_{ip}$ is the degree of affect in review content, measured by the ratio of the affective word count, captured by the LIWC[1] 2015 version, to total word count in a review; $FPPP_{ip}$ is the ratio of first-person plural pronoun count, e.g. we, us, and our, to the total word count in a review; $2ndPP_{ip}$ is the ratio of second-person pronoun count, e.g. you and yours, to the total word count in a review; $3rdPP_{ip}$ is the ratio of third-person pronoun count, e.g. she, her, he, and they, to the total word count in a review; IPP_{ip} is the ratio of impersonal pronoun count, e.g. it and those, to the total word count in a review; $Time_{ip}$ is measured by the natural log of the number days since posting; and δ_p is the fixed effect for product p. We include $FPPP_{ip}$, $2ndPP_{ip}$,

[1] A well-known, reliable psychometric tool, LIWC provides text analysis based on its dictionary of almost 6,400 words, word stems, and select emoticons. It assesses content features of a given text by calculating the ratio of a pre-defined set of words in the dictionary to the total word count (Pennebaker, Boyd, Jordan, & Blackburn, 2015).

$3rdPP_{ip}$, IPP_{ip} to control for the potential effects of various types of pronouns. We include $Time_{ip}$ to control for the potential temporal effect between earlier and later reviews in online review sequences (Aerts et al., 2017; Wang, Menon, & Ranaweera, 2018). α denotes the parameters of variables under study and β denotes that of control variables. The estimation of α_1 is used to examine H1.

To test hypotheses H2s, the interaction effect of FPSP and review attributes on review helpfulness, we examine the following:

$$\begin{aligned} Help_{ip} = C + \alpha_1 \cdot FPSP_{ip} + \alpha_2 \cdot FPSP_{ip} \cdot Length_{ip} + \alpha_3 \cdot FPSP_{ip} \cdot Rating_{ip} + \alpha_4 \\ \cdot FPSP_{ip} \cdot Extremity_{ip} + \alpha_5 \cdot FPSP_{ip} \cdot Affect_{ip} + \beta_1 \cdot Length_{ip} \\ + \beta_2 \cdot Rating_{ip} + \beta_3 \cdot Extremity_{ip} + \beta_4 \cdot Affect_{ip} + \beta_5 \cdot FPPP_{ip} \\ + \beta_6 \cdot 2ndPP_{ip} + \beta_7 \cdot 3rdPP_{ip} + \beta_8 \cdot IPP_{ip} + \beta_9 \cdot Time_{ip} \\ + \sum_{p=1,\ldots,120} \delta_p + \varepsilon_{ip} \end{aligned} \quad (2)$$

The estimations of α_2, α_3, α_4 and α_5 are used to evaluate H2(a), H2(b), H2(c) and H2(d), respectively.

A number of prior studies have used the same helpfulness measure (Huang, Chen, Yen, & Tran, 2015; Mudambi & Schuff, 2010). Following these studies, we use Tobit regression to analyze data. Tobit regression is suitable for this analysis because of the nature of the dependent variable $Help_{ip}$, the censored nature of the sample and the potential selection problem, i.e. not all review readers have voted for its helpfulness (Mudambi & Schuff, 2010).

4. Results

4.1. Results and Discussions

Table 2 reports the descriptive statistics for all variables in the entire sample as well as in each product sub-sample. As shown in Table 2, the mean for the helpfulness measure in the entire sample is .25, with the highest of .32 for printers and the lowest of .18 for music album. The FPSP consist of 4% of review words, being consist across product categories. The average review length is nearly 68 words in the entire sample. The music album category has the lowest mean of 40 words and the printers have the highest of 93 words. The average review valence is 4.31 out of 5, with music albums having the highest (4.67) and printers the lowest (4.12) average. In total, 72% of reviews are of extreme ratings of 1 or 5 in our sample. The affective words in the sample comprise 15% of total review words: the music album category has the most affective content (22%) and the printer has the least (8%). First-person plural, second-person, and third-person pronouns are relatively negligible in online product reviews - each consisted of 1% or less of total review words. Impersonal pronouns consist of 7% of total review words. The data shows rich and significant diversity of review characteristics across product categories. Table 3 reports the Spearman correlation coefficients of the variables.

[Insert Table 2 Here]

[Insert Table 3 Here]

Table 4 provides further details and compares different types of personal pronouns used in online product reviews. The results are in line with the data reported in previous research (Pollach, 2006), showing that FPSP are the dominating type of personal pronouns used in online product reviews. FPSP account for 65% of all personal pronouns used in our sample, higher for printers and TVs (72% and 70%, respectively), and lower for books and music albums (62% and

59%). This difference is largely caused by the higher use of the third-person pronouns in reviews for books and music albums (20% and 24%, respectively) to refer to the characters and authors/artists, compared with those for printers and TVs (6% and 7%, respectively). First-person plural pronouns account for 6% of total personal pronouns in the sample, with the highest for TVs (10%). This is because purchasing and watching TV is often characterized as a family activity. Second-person pronouns account for 14% of all personal pronouns and the number is consistent across various product categories.

[Insert Table 4 Here]

We estimated 6 models; model 1 is based on equation 1 to test H1, and models 2 to 6 are based on equation 2 to test H2(a), H2(b), H2(c), and H2(d). The AIC (Akaike Information Criterion) values are calculated as an estimator of the relative quality of these models. In addition, to compare the goodness of fit of models with interaction term(s), e.g. models 2 to 6, to that of model 1 without interaction terms, we performed a likelihood ratio test. The p-values of likelihood ratio tests are all below .10, indicating that adding interaction term(s) significantly increases model fit. The maximum variance inflation factors (VIFs) across all explanatory variables is 1.28, indicating that multicollinearity is not an issue. The regression results are reported in Table 5.

[Insert Table 5 Here]

Our results suggest that the use of FPSP is an influential factor that negatively affects perceived review helpfulness. Shown in model 1, the estimate of α_1 is significantly negative, indicating that readers consider reviews with more use of FPSP to be less helpful. H1 is strongly supported.

The interaction effects of FPSP with review attributes, proposed in H2(a), H2(b), H2(c) and H2(d), are tested separately in models 2 to 5. To determine whether our findings on individual interaction terms would hold when they are simultaneously considered, we pool all interaction terms in model 6. Inferences drawn from models 2 to 5 are consistent with that of model 6. The parameter estimation of the interaction term $FPSP_{ip} \cdot Length_{ip}$ is significantly positive, indicating that the effect of FPSP on review helpfulness is moderated by review length. The negative effect of FPSP is more prominent in shorter reviews than in longer ones. H2(a) is supported. The parameter estimation of the interaction term $FPSP_{ip} \cdot Rating_{ip}$ is significantly positive. This shows that the effect of FPSP on review helpfulness is moderated by review valence, being stronger for reviews with lower valence. H2(b) is supported. The parameter estimation of the interaction term $FPSP_{ip} \cdot Extremity_{ip}$ is positive but insignificant, therefore, review extremity is not a strong moderator in this case. H2(c) is not supported. The parameter estimation of the interaction term $FPSP_{ip} \cdot Affect_{ip}$ is significantly negative, indicating that the effect of FPSP on review helpfulness is moderated by affective content. The negative effect of FPSP is more prominent in reviews with higher degree of affect in the content than those with less. H2(d) is supported. Table 6 summarizes our hypotheses and tested results. Figure 2 plots the three interaction effects. Because the average use of FPSP in our sample is 4%, the interaction effects are plotted for two conditions: high (8%) vs. low (0%) use of FPSP.

[Insert Table 6 Here]

[Insert Figure 2 Here]

Estimations for other personal and impersonal pronouns used as control variables also reveal some interesting findings. Although these variables are not the focus of our study, to the best of our knowledge, this is the first study that reports their effects on online review

helpfulness. The parameter estimation of $FPPP_{ip}$ is significantly negative, indicating that similar to FPSP, the use of first-person plural pronouns has a negative effect on perceived review helpfulness. First-person plural pronouns are not the focus of this study because they are used much less frequently in the context of online product reviews than FPSP, i.e. 6% vs. 65% of total personal pronouns used, and their reference can be ambiguous. That is, while FPSP clearly refer to the reviewer himself/herself, first-person plural pronouns can refer to varied identities, such as reviewer and his/her family members or friends (for example, "we use it when we have friends visiting"), or readers or a group of consumers in general, (for example, "we should not accept such a poor quality product"). Our results also indicate that the use of second-person pronoun, you, has a significantly positive effect on online review helpfulness. This is consistent with marketing communications research that suggests the use of second person pronouns leads to self-referencing, which facilitates elaboration of incoming information (Burnkrant & Unnava, 1995; Debevec & Romeo, 1992) and increases communication effectiveness (Escalas, 2007). The parameter estimations of third-person pronouns and impersonal pronouns are insignificant.

Estimations for the effect of review attributes such as length, valence, extremity, and affect, are consistent with previous research (Forman, Ghose, & Wiesenfeld, 2008; Mudambi & Schuff, 2010; Pan & Zhang, 2011). The parameter estimation of $Length_{ip}$ is significantly positive, indicating that review length enhances review helpfulness. The parameter estimation of $Rating_{ip}$ is significantly negative, indicating that negative reviews are in general considered more helpful than positive reviews. The parameter estimation of $Extremity_{ip}$ is significantly positive, indicating that reviews with clear opinions are considered more helpful. The parameter estimation of $Affect_{ip}$ is significantly negative, indicating that affective content reduces perceived review helpfulness. This result is in line with previous findings that affective content

negatively influences the perceived information value of online reviews (Salehan & Kim, 2016), but can enhance consumer purchase intention and conversion rate (Ludwig et al., 2013).

4.2. Further Analysis

We performed various robustness tests to verify our findings. For example, we excluded reviews with zero or small numbers (i.e. less than three) of total helpfulness votes, and repeated the analysis. We performed OLS regression analysis to verify our results based on the Tobit regression. We incorporated a quadratic term of review length to control for the potential inverted-U effect (Kim et al., 2018). The results remained consistent.

In addition, we performed several exploratory tests to identify potential differential effects that may exist among product categories. First, we separated our sample to 4 product sub-samples and tested the equation 1 for each sub-sample separately. α_1 is consistently significant and negative in all sub-samples. We then added the interaction terms of $FPSP_{ip}$ and three product dummies, i.e. TV_i, $Printer_i$, and $Book_i$, in analysis on the full sample and reported the result in model 7 of Table 5. Out of the interaction terms, the estimation of $FPSP_{ip} \cdot Book_i$ is significantly positive. The results of these two tests indicate that the effect of FPSP on review helpfulness is consistently negative across product categories, but less prominent in book compared to other product categories.

We also performed additional analysis to examine whether the effect of FPSP varies for search and experience goods. Willemsen et al. (2011) reported an interaction effect between review valence and product type (search vs. experience) on review helpfulness. In our sample, printers and TVs are search goods, while books and music albums are experience goods. We created a dummy variable $Search_{ip}$ and tested its interaction term with $FPSP_{ip}$ in our analysis.

As shown in Table 5 (model 8), the parameter estimation is insignificant in our sample, indicating no differential effects for FPSP between search and experience goods. This suggests that even though consumers are more risk-adverse and cautious when it comes to evaluating experience goods (Willemsen, Neijens, Bronner, & De Ridder, 2011), the negative effect of FPSP is not any higher compared to search goods.

5. Conclusions and Discussions

When writing an online review, similar to any other textual message, reviewers not only make a decision on what to write but also how to write it. These decisions define the content of a message as well as its linguistic characteristics (Huffaker, Swaab, & Diermeier, 2011; Ludwig et al., 2013), both having a significant effect on readers' perception of information value. Recent research on online review helpfulness emphasizes the importance of review content, suggesting that content elements provide better diagnostic value to readers than non-content review features studied in earlier research (Cao et al., 2011; Willemsen, Neijens, Bronner, & De Ridder, 2011). An increasing list of review content elements such as argument density, diversity, and affect are examined (Salehan & Kim, 2016; Singh et al., 2017; Willemsen, Neijens, Bronner, & De Ridder, 2011); but the role of linguistic components has been largely neglected. Subtle language variations can cause significant differences in text comprehension (Brunyé et al., 2009; Gernsbacher & Hargreaves, 1988). This research considers this influential and innate characteristic of textual information. In particular, it explores the impact of using FPSP, an important linguistic element that is excessively used in online reviews (Pollach, 2006), on review helpfulness.

Our results based on analysis of 41,656 reviews for 120 products in 4 product categories indicate that the use of FPSP has a significant negative effect on online review helpfulness. This effect is moderated by certain review attributes, such as length, valence and affective content, being more prominent for shorter reviews, reviews with lower valence, and reviews featuring more affect in their content. Additional exploratory analyses show that this effect is consistent across search and experience goods, but less prominent in book reviews than other three product categories.

5.1. Theoretical Contribution

Our results contribute to the theoretical development in three research areas. First, this study introduces a new contributing factor, use of FPSP, to the online review helpfulness literature. Various attributes of reviews and reviewers have been extensively examined (Baek, Ahn, & Choi, 2012; Cheng & Ho, 2015; Karimi & Wang, 2017; Willemsen, Neijens, Bronner, & De Ridder, 2011), being mainly focused on peripheral cues. Specifically, reviewer as the message source is traditionally considered as a peripheral cue. Our research, however, examines the role of reviewer within the review content. It shows that reviewer presence in review content has a detrimental impact on information value and deteriorates the perception of review helpfulness. This is in contrast to findings of a positive effect of using FPSP in other contexts (Zupnik, 1994). The study also shows that linguistic features of online reviews can interact with other review attributes such as length, valence, and affective content in information evaluation.

By studying the FPSP as the focal variable and including other pronouns such as first-person plural, second-person, third-person, and impersonal pronouns, this study provides a comprehensive view of pronoun usage and its impact in the online review contexts. We found

that personal pronouns have a more influential impact on online review helpfulness than impersonal pronouns. In line with Pollach (2006), we report that FPSP are by far the most used personal pronouns in online reviews. Despite their widespread use, FPSP, as well as first-person plural pronouns, negatively influence readers' evaluation of review helpfulness. Whereas, second-person pronouns that directly address the reader have a positive effect on online review helpfulness. This is consistent with the extant research on the use of second person pronouns in self-referencing (Burnkrant & Unnava, 1995; Escalas, 2006). No significant result for third-person pronouns is found in our sample. By illustrating the significant role of FPSP, we draw researchers' attention towards the importance of function words in future studies.

In addition, this research contributes to the marketing communication literature by exploring the effect of FPSP in online product review context, an important type of user-generated content. The marketing communication literature has examined the effect of pronoun use in several settings (Burnkrant & Unnava, 1995; Debevec & Romeo, 1992; Sela, Wheeler, & Serial-Abi, 2012), but has not extended the research to user-generated content. Online setting is however unique; users tend to be self-focused (Chiou & Lee, 2013; Vorauer & Ross, 1999), put themselves at the centre of writing, and at the same time, present little personal information for source assessment (Willemsen, Neijens, Bronner, & De Ridder, 2011). We discuss that this unique characteristic of digital platforms triggers different comprehension mechanisms and alters the effect of a linguistic element on consumer information evaluation. We explain that central processing of review content is dependent on how the message is comprehended, and comprehension is influenced by linguistic variations such as use of FPSP. We show that various message attributes can interact with linguistic elements and generate diverse effects on consumer perception of information helpfulness. This can be tested in other online communication settings.

Finally, this research contributes to the linguistic literature by exploring a unique setting, online review platforms. It extends previous findings on the influence of pronouns such as FPSP on readers' comprehension and information evaluation (Brunyé et al., 2009; Gernsbacher & Hargreaves, 1988) to the multiple text reading context of online review where readers are highly task oriented. It confirms the context-dependent effect of pronoun use and illustrates the importance of studying pronoun use in specific contexts.

5.2. Managerial Implications

This study provides several managerial implications. First, it draws the attention of marketing managers to the importance of information value and helpfulness. With an ever-increasing focus on consumer experience (Wang & Head, 2007), understanding how they interact with online platforms and evaluate the information to make purchase decisions is a fundamentally critical issue (Karimi, Holland, & Papamichail, 2018). Understanding how consumers evaluate the value of information can help with providing relevant helpful content. Such consumer insight may not immediately contribute to short-term sales performance, but will increase customer satisfaction and lead to long-term firm value.

In addition, linguistic categories can be effective in predicting the helpfulness of online reviews (Krishnamoorthy, 2015; Malik & Iqbal, 2018; Ngo-Ye, Sinha, & Sen, 2017). This research suggests a new linguistic factor that firms can capture to identify useful and influential online reviews. In a digital environment where organizations struggle to identify valuable information within large unstructured datasets, being able to understand and detect more influential information is of great advantage. This research provides a better framework for businesses by suggesting that linguistic elements of online content should be considered along

with keywords and affect to mine relevant and helpful information. Our findings can be applied by retailers and review platforms to enhance consumer experience and decision-making. For example, encouraging online consumers and review contributors to share their experiences using a more effective language choice can help potential consumers in their decision-making. Certain tools and guidelines can be offered for this purpose. For example, providing a writing style guideline for first time contributors on review platforms or offering autofill starting phrases in comment sections can be useful. This could be particularly important when reviewers are leaving short, negative or affective reviews. In addition, review platforms can incorporate linguistic detection features to identify and recommend helpful reviews to readers. Furthermore, our findings can inform other types of online interaction, such as content creation by opinion leaders to enhance communication effectiveness.

5.3. Limitations and Future Research Directions

This research has several limitations and offers a number of directions for future research. We have examined the content of online reviews and considered several descriptive review attributes. Other factors including review authenticity and reviewer's characteristics such as credibility and culture (Baek, Ahn, & Choi, 2012; Karimi & Wang, 2017; Li, Lee, & Yang, 2018) have not been examined. Investigating the impact of FPSP along with these factors can further enhance our understanding of online review helpfulness.

In addition, we have suggested several mechanisms, such as perceived information subjectivity, information complexity, reader's attention, and information relevance, under which FPSP affect review helpfulness. Future research can focus on the significance of these mechanisms that underlie the negative impact of FPSP on review helpfulness. By using

experimental design, in particular, use of eye tracking and video recording techniques researchers could capture the reader's evaluation processes and focused attention. Furthermore, depending on readers' motivation and ability to elaborate on the message, review content elements could serve as arguments or peripheral cues. Therefore, FPSP may work differently for readers who are in a central versus peripheral processing mode. Such difference could be further explored.

Despite the benefits of using actual helpfulness votes, studies that use such data may not represent the entire population of review readers because not all readers provide a helpfulness vote. This potential issue, pertaining to all research using real customer data, should be investigated by identifying whether there is a difference in the characteristics of these users.

Our results provide strong evidence for the impact of one type of function words, FPSP, on consumer comprehension and perception of review helpfulness. Function words consist of a large category of words (Chung & Pennebaker, 2007). As the current focus of online review research is on content words (Salehan & Kim, 2016), studying function words may provide interesting and fruitful insights to advance our understanding on online reviews. Future research can also investigate the impact of other language variations on online review helpfulness.

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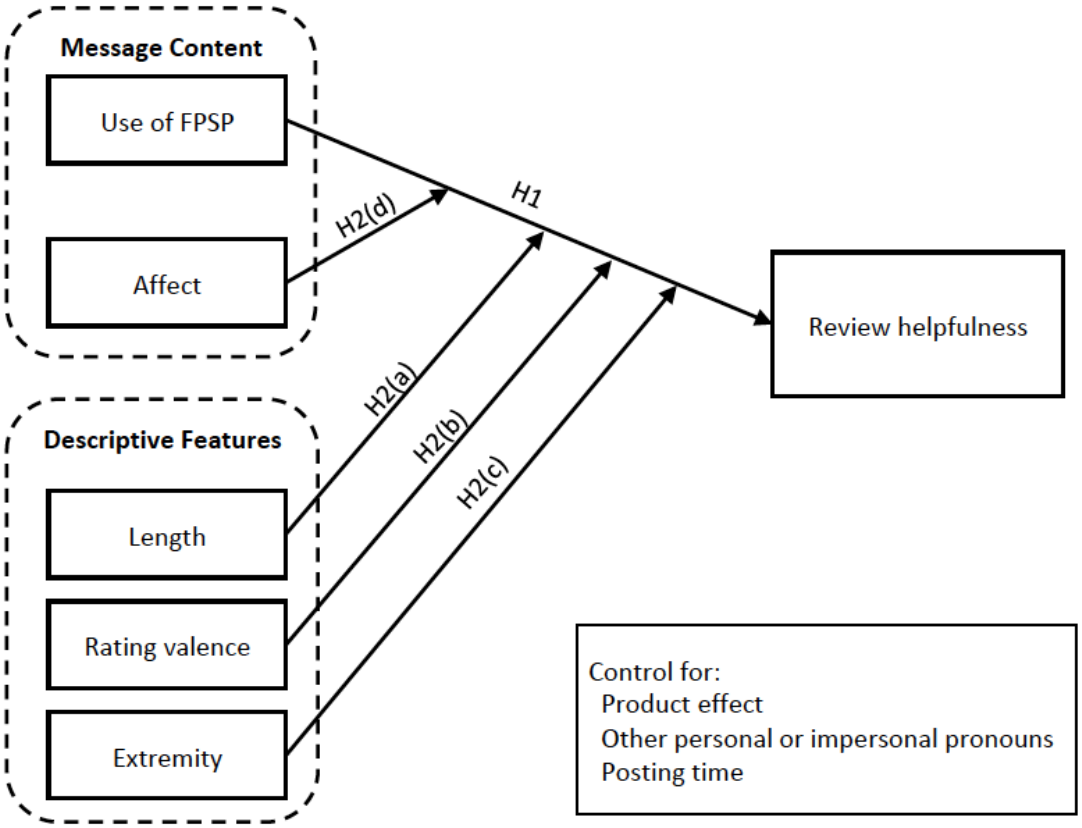
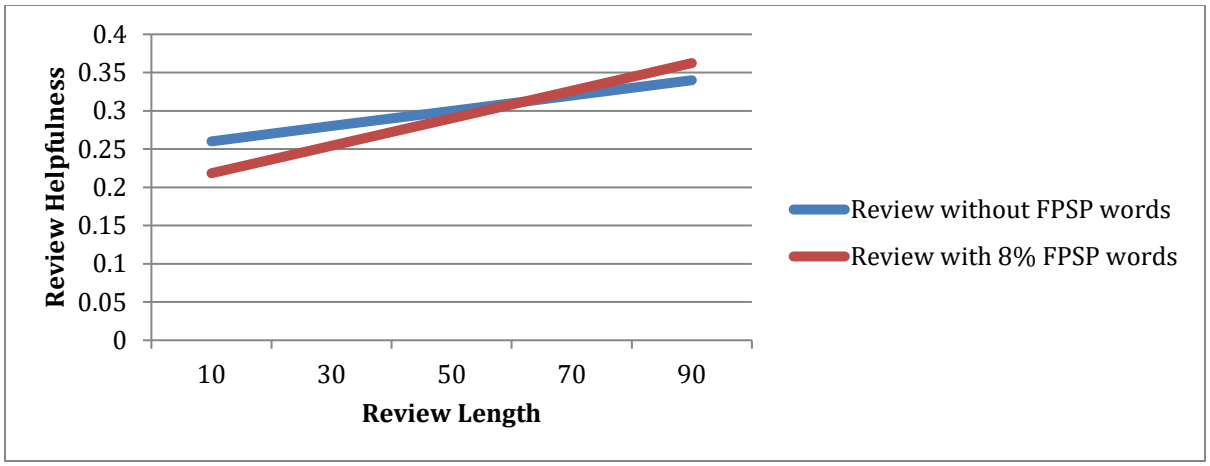
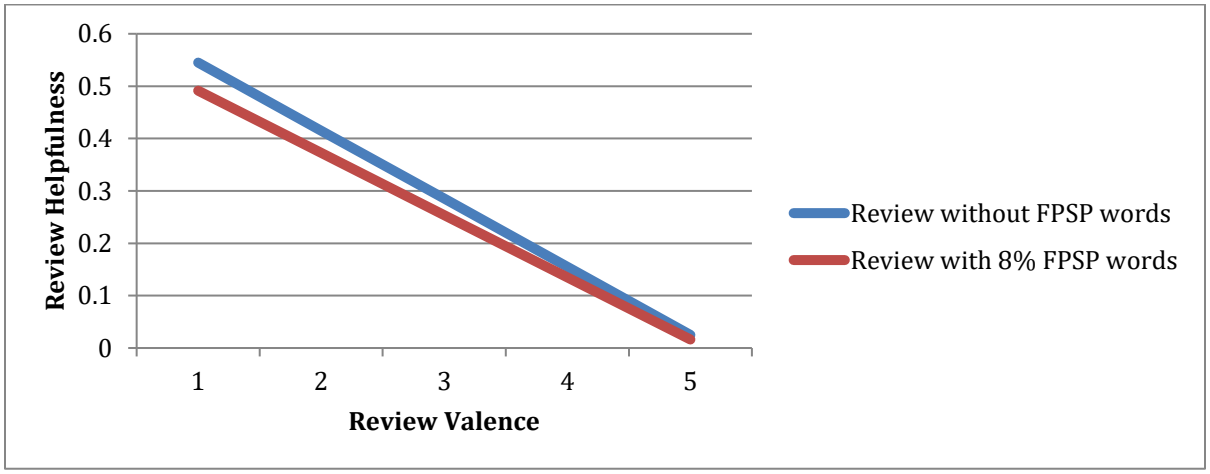


Figure 1. Research Framework – Impact of First-Person Singular Pronouns on Review Helpfulness





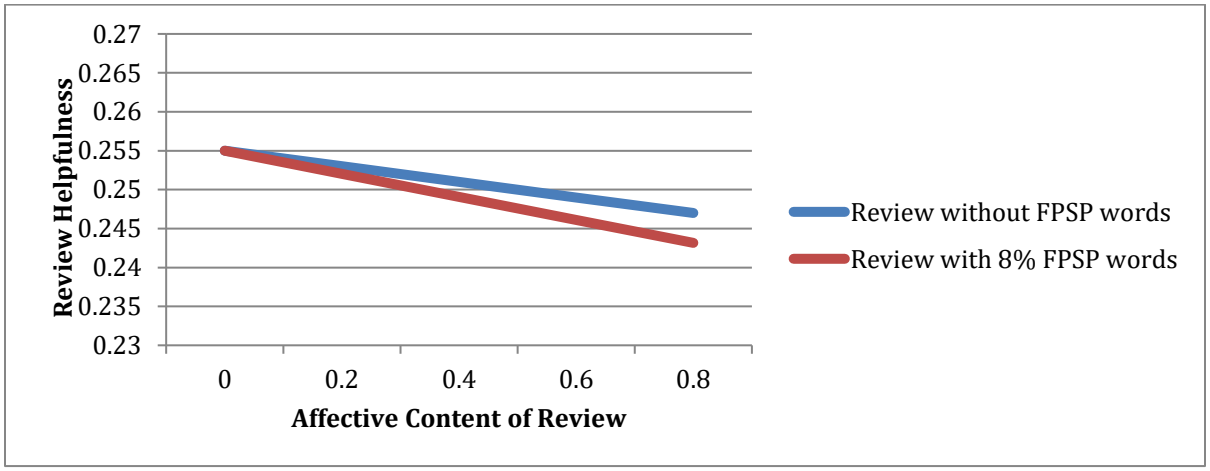


Figure 2. Plots of Interaction Effects

	Review Features	Reviewer Information
Argument Quality	Argument depth, density and diversity; Linguistic style match (e.g. Aghihotri & Bhattacharya, 2016; Ludwig et al., 2013; Singh et al., 2017; Willemsen, Neijens, Bronner, & De Ridder, 2011)	Reviewer presence in the review content (FPSP) (This research)
Peripheral Cues	Valence; Extremity/equivocality; Length; Sentiment; Affect; Readability; Use of exclamation marks or bolded letters (e.g. Folse, Porter, Godbole, & Reynolds, 2016; Forman, Ghose, & Wiesenfeld, 2008; Mudambi & Schuff, 2010; Pan & Zhang, 2011; Salehan & Kim, 2016)	Reviewer's identity disclosure; Reviewer ranking; Profile image (e.g. Baek, Ahn, & Choi, 2012; Cheng & Ho, 2015; Karimi & Wang, 2017)

Note: This table does not provide an ultimate classification, but rather summarizes commonly discussed categorization in prior literature. Depending on contextual and situational factors, elements of online review can serve as arguments, peripheral cues, or influence the extent of argument elaboration (Petty & Cacioppo, 1986).

Table 1. Factors Influencing Online Review Helpfulness: Extant Research vs. This Study

Mean (S.D.)	Entire Sample	Printer	TV	Book	Music Album
$Help_{ip}$	.25 (.40)	.32 (.44)	.29 (.41)	.21 (.37)	.18 (.35)
$FPSP_{ip}$	.04 (.05)	.04 (.04)	.04 (.05)	.04 (.04)	.04 (.06)
$Length_{ip}$	68.25 (124.73)	92.99 (118.97)	58.36 (111.07)	86.11 (155.99)	39.80 (106.02)
$Rating_{ip}$	4.31 (1.17)	4.12 (1.33)	4.27 (1.20)	4.21 (1.16)	4.67 (.85)
$Extremity_{ip}$	.72 (.45)	.70 (.46)	.70 (.46)	.64 (.48)	.85 (.36)
$Affect_{ip}$	.15 (.19)	.08 (.11)	.17 (.19)	.12 (.16)	.22 (.24)
$Time_{ip}$	5.44 (.96)	6.47 (.89)	5.02 (.70)	5.41 (.58)	4.98 (.86)
$FPPP_{ip}$	.00 (.02)	.00 (.01)	.01 (.02)	.00 (.01)	.00 (.01)
$2ndPP_{ip}$	.01 (.02)	.01 (.02)	.01 (.02)	.01 (.02)	.01 (.03)
$3rdPP_{ip}$	.01 (.02)	.00 (.00)	.00 (.00)	.01 (.02)	.00 (.00)
IPP_{ip}	.07 (.08)	.07 (.05)	.06 (.07)	.07 (.06)	.08 (.11)
N	41,656	9,436	11,561	10,929	9,730
No. of Products	120	30	30	30	30
Reviews per Product	339	315	385	364	324

Table 2. Descriptive Statistics of Variables

	$Help_{ip}$	$FPSP_{ip}$	$Length_{ip}$	$Rating_{ip}$	$Extremity_{ip}$	$Affect_{ip}$	$FPPP_{ip}$	$2ndPP_{ip}$	$3rdPP_{ip}$	IPP_{ip}	$Time_{ip}$
$Help_{ip}$	1										
$FPSP_{ip}$	.10***	1									
$Length_{ip}$	.38***	.40***	1								
$Rating_{ip}$	-.18***	-.08***	-.28***	1							
$Extremity_{ip}$	-.08***	-.05***	-.21***	.75***	1						
$Affect_{ip}$	-.24***	-.29***	-.58***	.27***	.17***	1					
$FPPP_{ip}$	.13***	-.03***	.32***	-.03***	-.03***	-.16***	1				
$2ndPP_{ip}$	.20***	.05**	.46***	-.10***	-.07***	-.27***	.12***	1			
$3rdPP_{ip}$	.16***	.14***	.44***	-.11***	-.07***	-.23***	.20***	.17***	1		
IPP_{ip}	.06***	.30***	.27***	-.05***	-.02***	-.19***	.06***	.11***	.06***	1	
$Time_{ip}$	.19***	.15***	.35***	-.08***	-.06***	-.27***	.10***	.15***	.05***	.10***	1

***p< .01; **p< .05; *p< .10 (2-tailed)

Table 3. Correlations between Variables

	Entire Sample	Printer	TV	Book	Music Album
First-Person Singular Pronouns	.65 (.27)	.72 (.22)	.70 (.36)	.62 (.37)	.59 (.38)
First-Person Plural Pronouns	.06 (.19)	.07 (.21)	.10 (.27)	.04 (.15)	.02 (.11)
Second-Person Pronouns	.14 (.27)	.15 (.25)	.13 (.25)	.14 (.27)	.15 (.29)
Third-Person Pronouns	.15 (.26)	.06 (.14)	.07 (.16)	.20 (.28)	.24 (.32)
N	41,656	9,436	11,561	10,929	9,730
No. of Products	120	30	30	30	30

Table 4. Percentage of Each Type of Personal Pronouns across the Sample

	Analysis						Exploratory Study	
Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$FPSP_{ip}$	-.28**	-.62**	-.81**	-.55**	.12	-1.39***	-.49**	-.23*
$FPSP_{ip} \cdot Length_{ip}$		.01***				.02***		
$FPSP_{ip} \cdot Rating_{ip}$			.14*			.22*		
$FPSP_{ip} \cdot Extremity_{ip}$				.36		.13		
$FPSP_{ip} \cdot Affect_{ip}$					-.03***	-.02**		
$FPSP_{ip} \cdot TV_i$							.24	
$FPSP_{ip} \cdot Printer_i$							-.00	
$FPSP_{ip} \cdot Book_i$							.47*	
$FPSP_{ip} \cdot Search_{ip}$								-.10
$Length_{ip}$	.001***	.001***	.001***	.001***	.001***	.001***	.001***	.001***
$Rating_{ip}$	-.12***	-.12***	-.13***	-.12***	-.12***	-.13***	-.12***	-.12***
$Extremity_{ip}$	.06***	.06***	.06***	.04***	.06***	.04***	.06***	.06***
$Affect_{ip}$	-.01***	-.01***	-.01***	-.01***	-.01***	-.01***	-.01***	-.01***
$FPPP_{ip}$	-.74**	-.65*	-.74**	-.74**	-.70**	-.61*	-.75**	-.75**
$2ndPP_{ip}$	.79***	.81***	.79***	.79***	.82***	.83***	.79***	.79***
$3rdPP_{ip}$	.28	.37	.27	.27	.28	.36	.29	.28
IPP_{ip}	-.02	-.01	-.02	-.02	-.01	-.00	-.02	-.02
$Time_{ip}$	1.10***	1.01***	1.01***	1.01***	1.01***	1.01***	1.01***	1.01***
$Product_p$	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect	Fixed effect
N	41,656	41,656	41,656	41,656	41,656	41,656	41,656	41,656
Log likelihood	-27,688	-27,670	-27,686	-27,686	-27,683	-27,664	-27,686	-27,686
AIC	55,636	55,602	55,634	55,634	55,628	55,596	55,638	55,634

***p< .01; **p< .05; *p< .10

Table 5. Regression Results

Hypotheses	Expected Effect	Estimation Results		Conclusion
		Effect	Significance	
H1: Negative effect of FPSP on perceived online review helpfulness	-	-	Yes	Supported
H2(a): Interaction effect of FPSP and review length	+	+	Yes	Supported
H2(b): Interaction effect of FPSP and review valence	+	+	Yes	Supported
H2(c): Interaction effect of FPSP and review extremity	-	+	No	Not supported
H2(d): Interaction effect of FPSP and review affective content	-	-	Yes	Supported

Table 6. A Summary of Hypotheses Testing and Our Results